STATE OF NEW HAMPSHIRE

DEPARTMENT OF HEALTH AND HUMAN SERVICES

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RECOMMENDATIONS FOR ARBOVIRAL TESTING AND REPORTING OF NEW CASES OF ENCEPHALITIS AND ASEPTIC MENINGITIS AS A SURVEILLANCE TOOL FOR HUMAN CASES OF WEST NILE VIRUS NEUROLOGICAL ILLNESS

Please Distribute to All Primary Care Staff, Including both Adult and Pediatric, Emergency Room, Infectious Disease, Neurology, Intensive Care Unit, Ambulatory Care and Laboratory Medicine Staff

Dear Clinicians and Infection Control Practitioners:

Since 1999, the New Hampshire Department of Health and Human services has conducted surveillance activities for arboviruses, including West Nile Virus (WNV). On August 30, 2000, the NH Department of Health and Human Services (NH DHHS) identified West Nile virus for the first time when a citizen from Manchester submitted an infected dead crow. By the end of the 2000 season, we reported 7 positive birds in our state.

New Hampshire surveillance activities yielded our first human cases during the 2003 season; three human cases were reported and investigated. One was found to have no out of state travel history; all three patients survived.

In just four seasons, evidence of the virus has been detected in all but two states in the continental United States.

Nationally, for the 2003 season, there were 9858 human cases reported to the CDC. Of these, 6828 patients (69%) met the case definition for West Nile fever (milder disease). **Neuroinvasive Disease** was apparent in 2864 (29%) of these diagnosed cases (refers to severe disease cases, particularly West Nile meningitis and West Nile encephalitis), and 166 (2%) were clinically unspecified. The months of August and September are when the greatest number of cases are discovered.

Confirmation of the virus being transmitted through organ transplants, blood transfusion, from mother to unborn child, an occupational exposure (percutaneous, scalpel contaminated with infected tissue), and in breast milk has been established.

Clinical Presentation

Most WNV infections are mild and often clinically unapparent.

- Approximately 20% of those infected develop a mild illness (West Nile fever).
- The incubation period is believed to range from 3 to 14 days.
- Symptoms generally last 3 to 6 days.

Even though the full clinical spectrum of West Nile fever has not been determined in the United States, reports from earlier outbreaks describe the mild form of WNV infection as a **febrile illness of sudden onset** often accompanied by

- Malaise
- Anorexia
- Nausea
- Vomiting
- Eye pain
- Headache
- Myalgia
- Rash
- Lymphadenopathy

Approximately 1 in 150 infections will result in severe neurological disease with encephalitis being reported more commonly than meningitis. The most significant risk factor for developing severe neurological disease is advanced age.

In recent outbreaks, symptoms occurring among patients hospitalized with severe disease included: fever, gastrointestinal symptoms and a wide variety of neurological symptoms such as:

- Ataxia and extrapyramidal signs
- Cranial nerve abnormalities
- Change in mental status
- Muscle weakness and flaccid paralysis
- Optic neuritis
- Polyradiculitis
- Seizures
- Myelitis

A minority of patients with severe disease developed a maculopapular or morbilliform rash involving the neck, trunk, arms, or legs. Although not observed in recent outbreaks, myocarditis, pancreatitis, and fulminant hepatitis have been described.

Laboratory Findings

Among patients in recent outbreaks:

- Total leukocyte counts in peripheral blood were mostly normal or elevated, with lymphocytopenia and anemia also occurring.
- Hyponatremia was sometimes present, particularly among patients with encephalitis.
- Examination of the cerebrospinal fluid (CSF) showed pleocytosis, usually with a predominance of lymphocytes.

- Protein was universally elevated.
- Glucose was normal.
- Computed tomographic scans of the brain mostly did not show evidence of acute disease, but in about one-third of patients, magnetic resonance imaging showed enhancement of the leptomeninges, the periventricular areas, or both.

Diagnostic Testing

- The most commonly used laboratory test measures IgM antibody to WNV in serum or cerebral spinal fluid (CSF) collected within 8 days of illness onset using the IgM antibody capture enzyme-linked immunosorbent assay (MAC-ELISA).
- Since the IgM ELISA is a preliminary test, confirmation by Plaque Reduction Neutralization test is confirmatory for case confirmation.
- Since IgM antibody does not cross the blood-brain barrier, IgM antibody in CSF strongly suggests central nervous system infection.
- Patients who have been recently vaccinated against or recently infected with related flaviviruses (e.g., yellow fever, Japanese encephalitis, dengue) may have positive WNV MAC-ELISA results.

Treatment

Treatment is supportive, often involving hospitalization, intravenous fluids, respiratory support, and prevention of secondary infections for patients with severe disease.

- Ribavirin in high doses and interferon alpha-2b were found to have some activity against WNV in vitro, but no controlled studies have been completed on the use of these or other medications, including steroids, antiseizure drugs, or osmotic agents, in the management of WNV encephalitis.

For additional clinical information, please refer to Petersen LR and Marfin AA, "West Nile Virus: A Primer for the Clinician [Review]" *Annals of Internal Medicine* (August 6) 2002:137:173-9.

REPORTING NEW ONSET CASES OF SUSPECTED WEST NILE-LIKE VIRUS

Clinicians and Hospitals should immediately report any patients meeting the following criteria, with illness onset beginning June 1, 2004 or later:

CRITERIA FOR REPORT:

1. Any patient with viral encephalitis, (Criteria a, b and c below):
   a. Fever $\geq$ 38.0 C or 100 F, and
   b. CNS involvement including altered mental status (altered level of consciousness, confusion, agitation, lethargy) and/or other evidence of cortical involvement (e.g., focal neurologic findings, seizures), and

c. Abnormal CSF profile suggesting a viral etiology (a negative bacterial stain and culture with a pleocytosis [WBC between 5 and 1500 cells] and/or an elevated protein level [> 40 mg]), with or without criteria d.
d. Muscle weakness (especially flaccid paralysis) confirmed by neurologic exam or by EMG.

2. Any patient with presumptive aseptic meningitis. This includes symptoms of fever, headache, stiff neck and/or other meningeal signs along with laboratory evidence of CSF pleocytosis with predominant lymphocytes, moderately elevated protein, and a negative gram stain and culture).
3. Guillain-Barre syndrome, especially with atypical features, such as fever, altered mental status, and/or pleocytosis.

All suspect cases should first be reported to the NH-DHHS by telephone or by fax using the initial standard case report form. BCDC staff will help determine if the clinical presentation meets the case criteria for viral meningo-encephalitis and whether further testing would be appropriate. Our staff will then help facilitate and assure the collection of acute and convalescent sera on all suspected case-patients. Specimens received by the NH Public Health Laboratories for West Nile testing are done free of charge.

We have established a toll free information line and a web site for West Nile virus information; the phone number is 1-866-273-6453 (NILE) and the web address is http://www.dhhs.nh.gov/. Click on the "West Nile virus" link, where you will find numerous fact sheets addressing the many aspects of West Nile virus, as well as links to other West Nile related sites.

If you, or other health care providers have questions, please do not hesitate to call us. During business hours (8 am to 4:30 pm), call Tom Marsh in the Communicable Disease Control Section at (603)-271-3910 or 1-800-852-3345 extension 3910. Nights or weekends call the New Hampshire Hospital switchboard at 1-800-852-3345 extension 5300 and request the Public Health Professional on-call.

Attached you will find the 2004 season New Hampshire recommendations for clinical laboratory sample collection and submission, as well as the disease reporting form.

The success of our combined efforts will be due in large part to the rapid communication and cooperation of the medical and laboratory communities with NH DHHS. As always, we appreciate the ongoing partnership with the healthcare providers of New Hampshire in reporting and investigating unusual disease manifestations or clusters.

Sincerely,

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